IN THE CLAIMS

1-7. Canceled

8. (Currently Amended) A VOD system comprising a refractive index switching system wherein upon passage of an optical signal through the index switching system, a delay is varied by the a selected fluid within the a fluid-holding region.

9. (Currently Amended) The VOD system as in claim 8, wherein one or more fluid-holding regions capable of having at least ~~2~~ two different fluids exchanged therein are provided.

10. (Currently Amended) The VOD system as in claim 9, wherein the at least ~~2~~ two different fluids comprise air and a refractive fluid.

11. (Original) The VOD system as in claim 9, wherein the region dimensions are essentially constant.

12. (Original) The VOD system as in claim 10, wherein a medium delay is imparted on the optical signal.

13. (Original) The VOD system as in claim 12, wherein the medium delay is about 100 fs to about 10 ps.

14. (Currently Amended) The VOD system as in claim 8, wherein an optical path length is varied by introducing or evacuating either air or liquid material within the fluid-holding region along the optical signal travel path.

15. (Currently Amended) The VOD system as in claim 14, wherein the introduction and/or evacuating is into the predefined gaps within the fluid-holding region.

16. (Original) The VOD system as in claim 15, wherein the introduction and/or

evacuating is performed with micro-pumps, or micro-fluidic actuators.

17. (Original) The VOD system as in claim 15, wherein the micro-fluidic actuators may comprise electro-static actuator, electro-magnetic actuator, electro-thermal actuator, or any other MEMS actuators.

18. (Currently Amended) The VOD system as in claim 9, wherein at least one of the at least 2 two different fluids comprises a refractive fluid.

19. (Original) The VOD system as in claim 18, wherein the refractive fluid may comprise any chemically stable liquid compounds capable of providing a refractive index value greater than the other fluid.

20-26. -(Canceled)

27. (Original) A VOD system comprising optical manifolds including index switching systems, wherein regions capable of having at least 2 different fluids exchanged therein are arranged in a folded path to allow pass-through or delay depending on the choice of fluid in the region, the delay being based on the folded path length.

28. (Original) The VOD system as in claim 27, wherein the folded path is extended by serial regions capable of having at least 2 different fluids exchanged therein.

29. (Original) The VOD system as in claim 27, wherein a coarse delay is imparted on the optical signal.

30. (Original) The VOD system as in claim 29, wherein the coarse delay is about 10 ps to about 1 ns.

31. (Original) The VOD system as in claim 27, wherein multiple folds are provided.

32. (Original) The VOD system as in claim 31, wherein multiple folds comprise single folds stacked on top of each other.

33. (Original) The VOD system as in claim 31, wherein multiple folds comprise a single monolithic block of molded manifold

34. (Currently Amended) A variable optical delay (VOD) system comprising:
an optical switching subsystem; and
an optical manifold subsystem; and.
a variable fluid refraction altering subsystem.

35. (Canceled)

36. (Original) The VOD as in claim 34, wherein the optical switching subsystem comprises a liquid crystal cell.

37. (Original) The VOD as in claim 34, wherein the optical manifold subsystem comprises a plurality of polarization switches having variable optical paths, wherein at least one optical route comprises a folded path.

38. (Original) The VOD as in claim 37, wherein the polarization switches comprise liquid crystal cells.

39. (Original) The VOD as in claim 34, wherein the optical manifold subsystem comprises a plurality of total internal reflection switches having variable optical paths, wherein at least one optical route comprises a folded path.

40. (Currently Amended) The VOD as in claim ~~3534~~, wherein the variable fluid refraction altering subsystem comprises at least one micro-fluidic actuator.

41. (Original) The VOD as in claim 40, wherein the variable fluid refraction altering

subsystem comprises a fluid region having a first fluid with a first refractive index, further wherein the micro-fluidic actuator injects a second fluid with a second refractive index.

42. (Original) The VOD as in claim 41, wherein the first fluid comprises air.

43. (Original) The VOD as in claim 40, wherein the variable fluid refraction altering subsystem comprises a first fluid region having a quantity of a first fluid with a first refractive index and a second fluid region having a quantity of the first fluid, further wherein the micro-fluidic actuator injects a second fluid with a second refractive index into the first fluid region or the second fluid region.

44. (Original) The VOD as in claim 43, wherein the first fluid comprises air.